

Applic. No.: 10/740,073

Amdt. Dated February 6, 2006

Reply to Office action of September 12, 2005

REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 9-24 remain in the application. Claims 9, 11, 13, and 22-23 have been amended. Claims 23-24 have been withdrawn and rejoinder of method claims 23-24 upon allowance of the product claims has been requested.

In deference to the Examiner's requirement in the section entitled "Election/Restriction" on page 2 of the Office action, Applicant confirms the election of Group I, claims 9-22.

In the section entitled " Claim Rejections - 35 USC § 112" on page 3 of the above-identified Office action, claims 9, 11, 13, 15, and 22 have been rejected as being indefinite under 35 U.S.C. § 112, second paragraph.

More specifically, the Examiner has stated that the terms "commonly coked" and "relatively small" in claim 9 are undefined leaving the claim vague and indefinite. These terms have been cancelled.

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The Examiner has also stated that it is not clear if the language of claim 11 referencing "at most 4%" and 8% refers to one or both numbers.

The Examiner's rejection is not understood. Claim 11 clearly recites that the feedstock contains at most 4% of the cut carbon fibers or 8% of the stabilized precursor fibers. It is noted that claim 9 recites that the mixture has a proportion of cut carbon fibers or stabilized precursor fibers.

The Examiner has further stated that the limitations in claim 13 are not clear as to what is being claimed or how large or small the fibers may or may not be. The word "size" has been changed to "sizing," which means a thin film on carbon fibers.

The Examiner has additionally stated that in claim 15 it is not clear if these components are added to the coke or if they are merely a size comparison. It is noted that the word "size" in claim 13 has been changed to "sizing."

Finally, the Examiner has stated that claim 22 appears to be in improper Markush group. Appropriate correction has been made.

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It is accordingly believed that the claims meet the requirements of 35 U.S.C. § 112, second paragraph. Should the Examiner find any further objectionable items, counsel would appreciate a telephone call during which the matter may be resolved. The above-noted changes to the claims are provided solely for cosmetic and/or clarificatory reasons. The changes are neither provided for overcoming the prior art nor do they narrow the scope of the claims for any reason related to the statutory requirements for a patent.

In the section entitled " Claim Rejections - 35 USC § 102" on pages 4-6 of the above-mentioned Office action, claims 9, 12-14, 16-19, and 21-22 have been rejected as being anticipated by GB 1 434 824 under 35 U.S.C. § 102(b) .

In the section entitled " Claim Rejections - 35 USC § 103" on pages 6-7 of the above-mentioned Office action, claims 10 and 20 have been rejected as being unpatentable over GB 1 434 824 in view of GB 1 548 046 under 35 U.S.C. § 103(a); claim 11 has been rejected as being unpatentable over GB 1 434 824 under 35 U.S.C. § 103(a) .

As will be explained below, it is believed that the claims were patentable over the cited art in their original form and the claims have, therefore, not been amended to overcome the

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references. However, the language of the claims has been slightly modified in an effort to even more clearly define the invention of the instant application.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 9 calls for, inter alia:

a mixture of:

a proportion of cut carbon fibers or stabilized precursor fibers for forming PAN-based carbon fibers; and

feedstock for a delayed coking process, said feedstock comprising a material selected from the group consisting of highly aromatic residues of vacuum distillation, residues of visbreaking, residues of a fluidized catalytic cracking process, residues of thermocracking, residues of ethylene pyrolysis, soft pitches produced from coal coking or by distillation of highly aromatic coal residues;

wherein the mixture has been coked in a delayed coker.

GB 1434824 concerns coke (claim 1) as well as carbon fibers (claim 3) made from coal. Already at the time of the filing of the application leading to the patent GB 1434824 the needle coke (made in delayed cokers) was a common, if not the predominant, raw material in the graphite electrode industry. Despite this, GB 1434824 clearly focuses exclusively on, at that time already being somewhat exotic, coke based on coal. Hence, the realization of the invention of patent GB 1434824

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must be assumed to be closely linked to coal-based coke. There is no hint in patent GB 1434824 pointing towards alternative utilization of (petroleum-based) needle coke. Although GB 1434824 uses the general term "carbon fiber," it becomes clear from the description as well as from the claims that the carbon fibers are also coal-based. GB 1434824 does not further mention using oxidized fibers, i.e. pre-cursors to carbon fibers.

Even further, as pointed out in GB 1434824 (see page 2, lines 26 to 30), the similarity of the raw material (coal solution or extract) for all 3 materials (i.e. coke, fibers and binder) is particularly advantageous to produce stronger and improved electrodes. This finding is also support in GB 1548046 (see page 2, lines 21 to 26), which points out issues related to different shrinkage behavior.

Hence, GB 1434824 points towards the utilization of very similar raw materials to achieve improved electrode properties. GB 1434824 can thus not anticipate the use of a mixture of three quite different materials each based on a different raw material and in particular to use a mixture of petroleum-based needle coke, PAN-based oxidized fibers or carbon fibers, and coal-based binder pitch to produce improved graphite electrodes.

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Besides the mastering of introducing the fibers effectively in the delayed coker, the invention of the instant application particularly overcomes the prior art disadvantages by furnishing the fibers with a sizing (claim 13) or oxygen groups (claim 14). GB 1434824 achieves a CTE (coefficient of thermal expansion) of  $7 \times 10^{-7}$  /K while the inventive electrodes of the invention of the instant application (see claim 18) reach CTE values of less than  $1.5 \times 10^{-7}$  /K which cannot be anticipated by the teachings of GB 1434824.

GB 1548064 does not teach that it is advantageous to use exclusively needle coke for stronger electrodes. Rather, it describes such an approach as prior art (see page 1, lines 42-45), which is limited in its result (see page 1, lines 49-53). Further, GB 1548064 points out issues related to different shrinkage behavior of coke and fibers. Hence, in view of GB 1434824 a person skilled in the art would not know that needle coke would be the material of choice.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claim 9. Claim 9 is, therefore, believed to be patentable over the art and since

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all of the dependent claims are ultimately dependent on claim 9, they are believed to be patentable as well.

In view of the foregoing, reconsideration and allowance of claims 9-22 are solicited. Rejoinder of method claims 23-24 is requested upon allowance of product claims 9-22 under MPEP 821.04 ("if applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims which depend from or otherwise include all the limitations of the allowable product claim will be rejoined").

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate a telephone call so that, if possible, patentable language can be worked out.

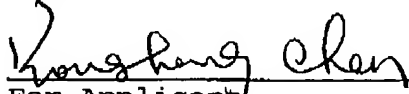
Petition for extension is herewith made. The extension fee for response within a period of two months pursuant to Section 1.136(a) in the amount of \$450.00 in accordance with Section 1.17 is enclosed herewith.

If an extension of time for this paper is required, petition for extension is herewith made. Please charge any fees which might be due with respect to 37 CFR Sections 1.16 and 1.17 to

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the Deposit Account of Lerner and Greenberg, P.A., No. 12-  
1099.

Respectfully submitted,

  
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YC

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